



U.S. Department of Transportation  
Federal Highway Administration

# TNM 3.0



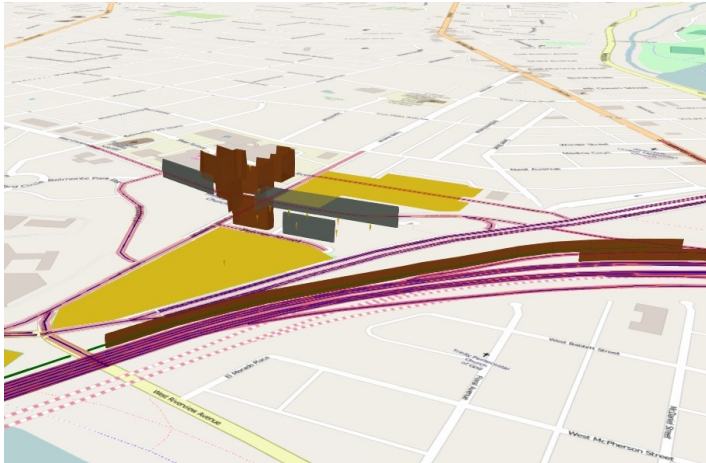
The Federal Highway Administration's Traffic Noise Model ® version 3.0

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## What is TNM 3.0?

The Federal Highway Administration's (FHWA) Traffic Noise Model (TNM) is a software application for modeling highway traffic noise. TNM 3.0 ® is the latest version of this software.

TNM 3.0 is a major update to the previous version - TNM 2.5. The TNM 2.5 was released in 2004 and no longer meets modern standards of interface design or software maintenance. TNM 3.0 incorporates new technology and research, and accounts for input received from TNM 2.5 users over the past 14 years.



TNM 3.0 3D View on computer desktop.

### New Features in TNM 3.0

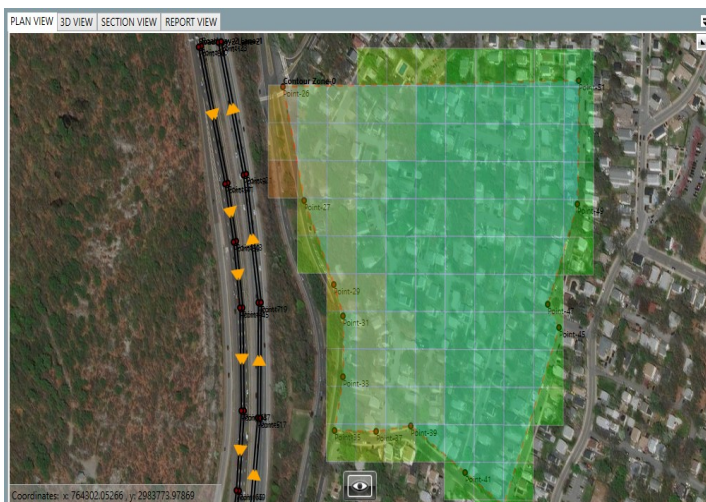
Separation of the UI from the Acoustical formulas to simplify future updates

#### Acoustics

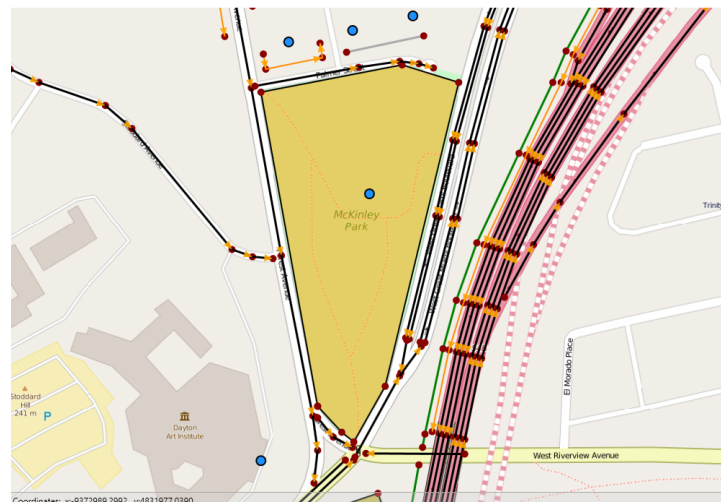
- Bug fixes to acoustical algorithms found in TNM 2.5
- Removal of TNM 2.5's interpolation below 250 Hz and extrapolation above 5000 Hz
- Calculations for all 1/3 octave bands (50 to 10,000 Hz)
- Calculation of single barrier reflection values
- Creation of a Roadway Acoustic Impedance Hierarchy in cases of overlapping roadways
- Ability to add flow control devices at any point of a roadway without needing to create a new roadway segment
- Updates to the ability to calculate  $L_{DN}$  and  $L_{DEN}$
- Addition of the  $L_{10}$  and  $L_{50}$  noise descriptors
- Updated free-field divergence that accounts for the horizontal *and* vertical components

#### User Interface

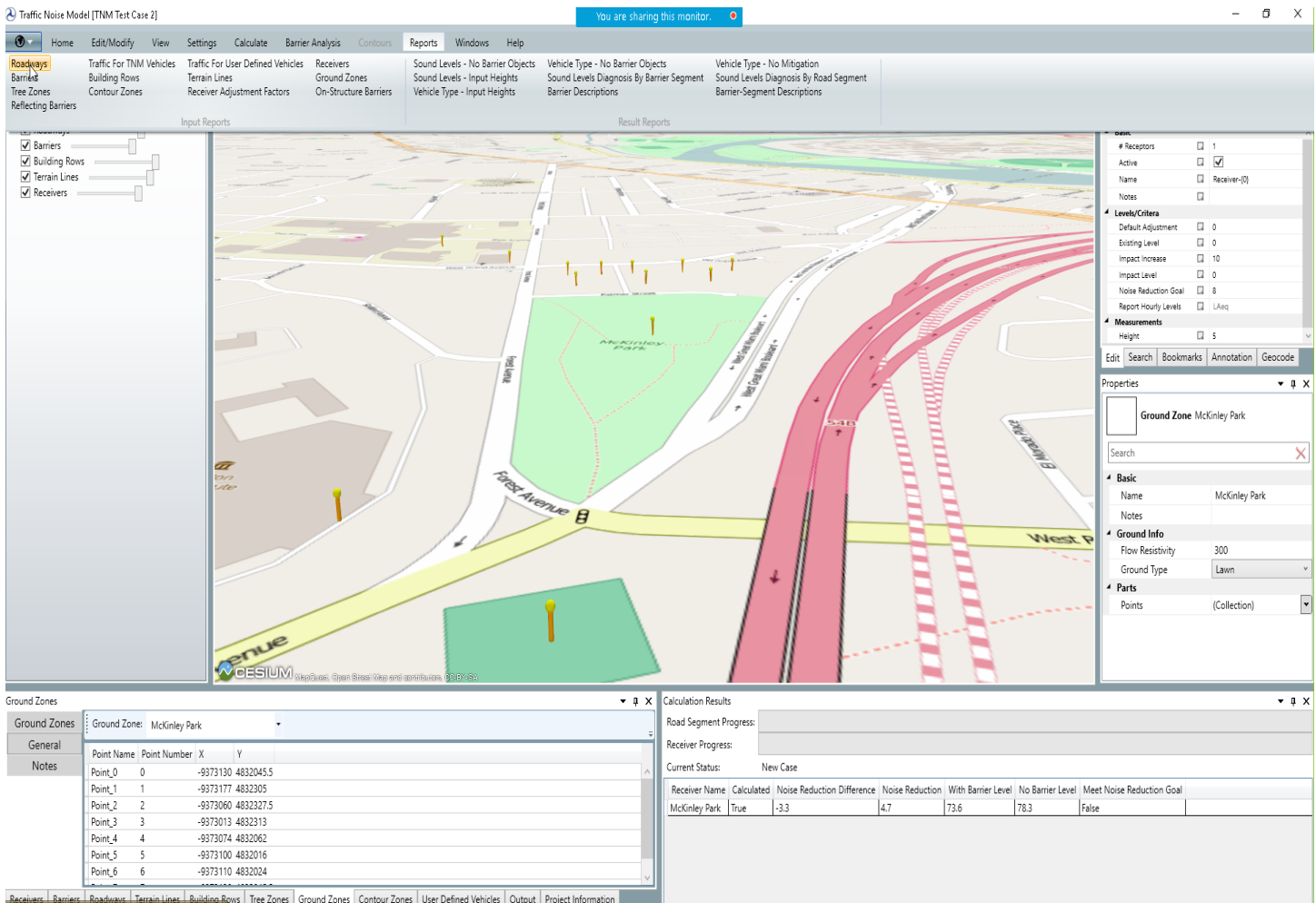
- Graphics and Map-based User Interface (UI)
- Multilane creation tool
- Parallel barrier analysis tool integration
- Enhanced line of sight analysis
- Ability to dock floating windows and have a split screen
- Enhanced edit menu
- Simplified 'hide or show' features functionality
- 3D views through a GIS application
- Help Menu embedded within TNM 3.0
- Ability to process Geographic Information Systems (GIS) and Computer-aided Design (CAD) files
- Updated printing and saving
- Transparency toggles



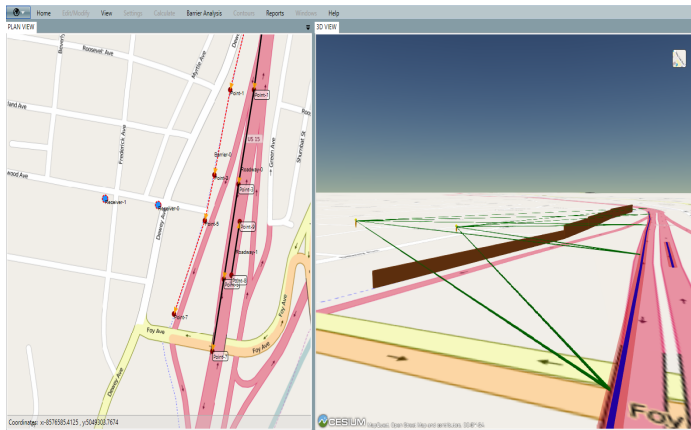
Contour overlay with fractional transparency in Plan View.



TNM 3.0 Plan View on computer desktop.

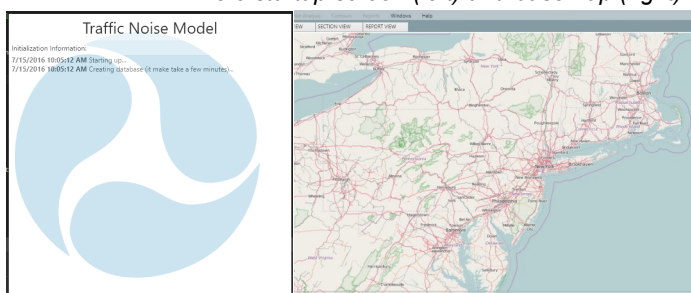


TNM 3.0 as it would appear on a typical desktop. This image shows the 'Reports' drop-down menu (top), 3D view (center), ground zones input dialog box (bottom left), and calculated noise levels (bottom right).



TNM 3.0 split screen functionality showing plan view (left) and 3D view with green line of sight visualization lines (right).

TNM 3.0 startup screen (left) and basemap (right).



## Contact Information

Please see:

[http://www.fhwa.dot.gov/environment/noise/traffic\\_noise\\_model/tnm\\_v30/](http://www.fhwa.dot.gov/environment/noise/traffic_noise_model/tnm_v30/)

Or contact us through [TNMHelp@dot.gov](mailto:TNMHelp@dot.gov)

## Minimum System Requirements (for optimal software performance)

OS: Windows 7 or higher (not compatible with Mac OS)	20 GB or more of free hard drive space available for working (2 GB minimum for install)
RAM: 16 GB	CPU: Intel® Core i5 or i7 (or equivalent CPU)
Graphics Card: Intel® HD Graphics (or equivalent)	

## Minimum Software Requirements

ArcGIS Runtime 10.2 when using ESRI based plan view only.

No additional software requirements when using alternate plan view.

## Software Basis for TNM 3.0

Esri ArcGIS Runtime	Microsoft Visual Studio	Cesium Viewer/ WebGL 3-D	GeoAPI C5
Microsoft .NET Framework	2010 with .NET 4.0	Power Collections	NUnit
OxyPlot	C#		Telerik